

# PATENT ABSTRACTS OF JAPAN

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## (54) SURFACE MODIFIED PEARLY LUST PIGMENT

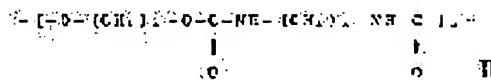
(57)Abstract:

PURPOSE: To obtain a surface modified pearly lust pigment which has a compatibility in the formulation in a wide range without losing typical characters of a pearly lust pigment by coating a pigment with specific polymers or melamine resin.

CONSTITUTION: The surface modified pearly lust pigment is coated with polymeric compounds of formula I or II, or 0.5-20% of a substituted or nonsubstituted melamine resin. In these formulae, M is a 1-10C alkyl, a COOR, NH<sub>2</sub>, COOH; R is a 1-10C alkyl; (x) is 1-10; (n) is >1000. As polymeric compounds to be used, polyethylene and polypropylene wax are especially cited. This surface modified pearly lust pigment is useful for paint, varnish, printing ink, plastics and cosmetics.

-(CH<sub>2</sub>-CH<sub>2</sub>)<sub>n</sub>-

I



II

## LEGAL STATUS

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JAPANESE

[JP,06-032996,A]

[Translation done.]

CLAIMS DETAILED DESCRIPTION TECHNICAL  
FIELD PRIOR ART TECHNICAL PROBLEM  
EXAMPLE

[Translation done.]

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## CLAIMS

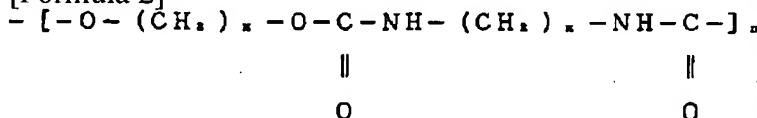
[Claim(s)]

[Claim 1] Pigments are Formulas a and b.

[Formula 1]

- (C.H<sub>2</sub> CHM)<sub>n</sub> -

[Formula 2]



[-- the alkyl group in which M is an alkyl group with the carbon atom of 1 thru/or 10, -COOR, -NH<sub>2</sub>, and -COOH in these formulas, and R has the carbon atom of 1 thru/or 10 -- it is -- x -- 1-10 -- it is -- n -- 1000 super-\*\*\*\*\*. ] a \*\* polymer compound -- or it permuted -- it is -- it is -- the surface treatment pearly luster pigment characterized by carrying out coating at melamine resin 0.5-20% which is not permuted.

[Claim 2] Pearly luster pigments are Formulas a and b.

[Formula 3]

- (C.H<sub>2</sub> CHM)<sub>n</sub> -

[Formula 4]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention is related to a surface treatment pearly luster pigment and its manufacture approach, and a pan at the use.

[0002]

[Description of the Prior Art] The pearly luster pigment based on the mica minute plate by which coating is carried out with the metallic oxide is used in many fields. The use to which these pigments increase increasingly in various fields requires the pigment by which surface coating was carried out and by which reforming was moreover carried out, and the purpose is for finally guaranteeing the compatibility of other components of a constituent, and a base. The pigment is used not only for pigment-izing of a varnish, powder coating, paint, printing ink, plastics, etc. but for manufacture of cosmetics.

[0003] In order to apply a pigment broadly, the pigment which has the capacity to give photoluminescent [ high ] to photochemistry stability, good endurance, outstanding coating, and outstanding surface coating is required.

[0004] Building a pearly luster pigment into a coating system has caused the behavior to which the pigment in a coating film was troubled by the condition of a certain kind. This troubled orientation behavior of a pigment has caused redispersible [ poor ]. A fundamental problem is the remarkable inclination of the pigment which forms floc, and it is very difficult in this floc to incline, to pile up a pigment superficially, and to separate into each other with that high adhesive property.

[0005] Furthermore, the film applied on the pigment later is demanding the stability of a pigment from weathering, i.e., moisture, and daylight. These surface films had mineral matter or the property of inorganic/organic substance before.

[0006] It is well-known to coat a pigment with an organic substance in itself. Therefore, DE In order to improve a fluidity in 3712289, coating is carried out from the mono-carboxy rucksack acid from which the pearly luster pigment was saturated. NL 7114475 has indicated coating of the pigment using a sodium stearate. Furthermore, it is JP that a pigment coats using polyester resin. It is indicated to 173033/1989. However, some coating approaches are very complicated, or only the use to which the pigment by which coating was carried out was restricted is accepted.

[0007]

[Problem(s) to be Solved by the Invention] The purpose of this invention is finding out the amelioration approach for coating a pearly luster pigment with an organic substance. It aims at that a base reaches far and wide without spoiling the typical special feature of especially a pearly luster pigment, and compatibility is in a formula. There was need for a surface treatment pearl pigment incorporable into a formula without spoiling the pigment property especially. It incorporated, often incorporated as a result for example, of pigment migration as a result of a pigment shock, i.e., incompatible nature, and is accompanied by such disadvantage of forming floc in inside.

[0008]

[Problem(s) to be Solved by the Invention] The purpose of this invention was attained thanks to the following discovery. Formulas a and b

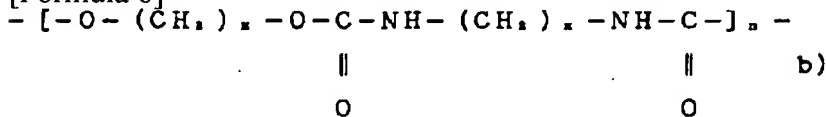
[0009]

[Formula 5]



[0010]

[Formula 6]



a \*\* polymer compound -- or it permuted -- it is -- it is -- melamine resin [which is not permuted -- in this formula, M and nx have the semantics shown by claim 1.] By coming out and coating a pearly luster pigment, the behavior by which the pigment under formula was troubled is reduced sharply.

[0011] Therefore, for the place by which invention is characterized [ the ] with regards to a surface treatment pigment, pigments are Formulas a and b.

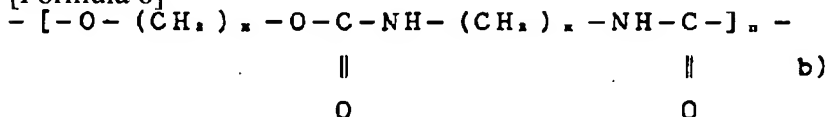
[0012]

[Formula 7]



[0013]

[Formula 8]



a \*\* polymer compound -- [-- the alkyl group in which M is an alkyl group with the carbon atom of 1 thru/or 10, -COOR, -NH2, and -COOH there, and R has the carbon atom of 1 thru/or 10 -- it is -- x -- 1-10 -- it is -- n -- 1000 super-\*\*\*\*\*. ] or it permuted -- it is -- it is -- 0.5-20% coating is carried out by the melamine resin which is not permuted.

[0014] For the place characterized [ the ] by this invention also with regards to the manufacture approach of a surface treatment pearly luster pigment, a pearly luster pigment is Formula a or Formula b.

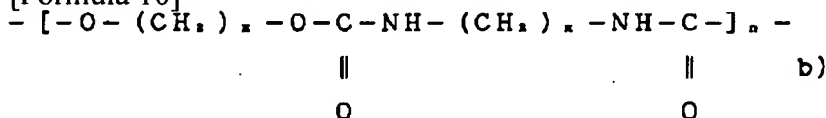
[0015]

[Formula 9]



[0016]

[Formula 10]



it is \*\* polymer resin or permuted -- it is -- it is -- coating is carried out by the melamine resin which is not permuted, and M, n, and x have above semantics in these formulas.

[0017] All ordinary pearly luster pigments are usable as a start material for a surface treatment pearly luster pigment, and the example is the mica by which coating was carried out with bismuth oxychloride and bismuth oxychloride or a minute tabular metallic oxide, especially a minute tabular iron oxide. However, it is a metallic oxide and the pearly luster pigment based on the mica flake by which coating was carried out especially with a titanium dioxide and/or an iron oxide is used especially preferably. All

these pigments are well-known, and manufacturing by the well-known approach is possible, for example, it can obtain as a commercial item from E. Merck Co. (Merck) and (Darmstadt Darmstadt) by the trade name called IRIODEIN. These pigments and the manufacture approach of those are the German patent specification, 1,467,468, 1,959,998, 2,009,566, 2,214,545 and 2,522,572, the European Patent specification 14,382, and US patent. It is indicated by 4,373,963.

[0018] For example, melamine resin like an acrylate melamine which is not permuted or permuted and Formula a, or Formula b

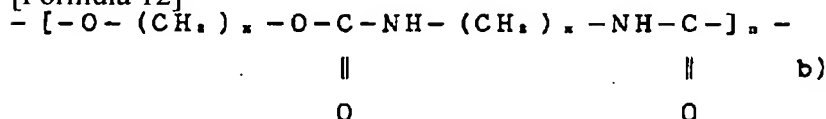
[0019]

[Formula 11]



[0020]

[Formula 12]



\*\* -- all well-known polymer compounds can use for coating of a pearly luster pigment.

[0021] The examples of an appropriate polymer compound are polyethylene, polypropylene, polybutadiene, polyacrylic acid, the poly METAKURU acid, a polyvinyl amide, polyvinyl chloride, polyvinyl ASETAMAIDO, polyurethane, and polyester. Especially desirable polymer compounds are polyethylene and a polypropylene wax.

[0022] Here, it is understood the polymer based on acrylic ester, and that the vocabulary "a wax" means further about 80 thru/or about 150 degrees C of polymers which have about 100 thru/or the softening range of 130 degrees C especially in principle.

[0023] It is clear that coating obtained so much by pigment weight using 0.5 to 20 % of the weight is appropriate. In order to coat with melamine resin, it became clear especially 5-20% of to be amount and that the amount of 5-10 is appropriate. On the other hand, especially in order to coat with a polymer, 2-3% is desirable 1 to 5%.

[0024] A modifier is the solid shape of a granularity wax or resin, or can also be used in the form of a solution. For this reason, the solvent used is a desirable very volatile organic solvent, and the evaporation easily carried out slowly after humid-izing on the front face of a pigment can remove it. Especially a solvent with a desirable for example, boiling range (about 100 degrees C thru/or about 150 degrees C) like a xylene or toluene is desirable. The requirements of the further addition about a solvent are whether a modifier dissolves easily or to distribute easily in it.

[0025] It can perform by simple mixing of a component in itself [ coating ]. It follows, for example, a pigment is introduced first and, subsequently to the solution of a coating agent or a coating agent, is mixed. If a coating agent is added in the form of a solution, a pigment will be distributed in this solution and a solvent will evaporate gradually. It is also possible to settle a coating agent from aqueous dispersion liquid using change of pH. Furthermore, coating can also fuse and apply a solid granularity polymer compound.

[0026] After removing a solvent, or after cooling the coating agent applied as a melting object, the easily processible free fluidity of a surface treatment pigment is powdered, and it exists.

[0027] The surface treatment pearly luster pigment manufactured by this approach is clearly built into an amelioration \*\*\*\*\* coating system, and is excellent for [ for an easy property ] the amelioration \*\*\*\*\* wind-resistance-ized property. As a matter of fact, the loss of gloss and generation of floc were not accepted.

[0028] Therefore, this invention is paint, printing ink, and a varnish. Also with regards to use of the pigment with which coating of [ under formula like plastics ] was carried out, it is related also to use of the pigment with which coating was further carried out for cosmetics manufacture.

[0029] The following examples explain invention.

[0030]

[Example]

Example 1 IRIODEIN 504 (from E. Merck and Darmstadt to the acquisition by which coating is carried out by mica pigment [ which has ten to 60 micrometer particle size ], and Fe 2O<sub>3</sub>) 50g is suspended in toluene 300ml, and polyethylene wax (molecular weight 10,000 [ about ]) 5g is added further. It flows back for 0.5 hours and polyethylene wax fuses suspension in the meantime. After cooling of suspension, polyethylene wax is adsorbed on the pigment. Suction filtration of the pigment by which coating was carried out is carried out, and it is dried at 80 degrees C for about 2 hours.

Test result a Humidity immersion test by DIN54001 (acrylic-melamine resin varnish)

IROODEIN 504-/polyethylene wax 4-5 IRIODEIN 504 (from E. Merck and Darmstadt to the acquisition which coating is carried out and is required by the mica pigment which has ten to 60 micrometer particle size, and Fe 2O<sub>3</sub>)

2 (minimum =1, max = 5)

b) Clarified-water test (water paint based on acrylate)

IROODEIN 504-/polyethylene wax Success IRIODEIN 504 a rejection -- the pigment by which coating was carried out as contrasted with the unsettled pigment -- a base -- so much -- the adhesive property of coating -- amelioration \*\*\*\*\* -- it was shown things and that generating of a bubble decreased.

[0031] c) The re-part acidity of the pigment coated with redispersible and optical test polyethylene wax has been improved. After inclusion of a processed pigment, floc was not accepted in the coating system.

Example 2 IRIODEIN 9103 (from E. Merck and Darmstadt to the acquisition by which coating is carried out by mica pigment [ which has ten to 40 micrometer particle size ], and TiO<sub>2</sub>) 50g is first introduced into a container, and it is SHINTEZE further. Solevesso of I SUMA (Synthese Boxmer) 5g of melamine resin which dissolved in 150 (hydrocarbon mixture of range of the 80 to 120 degree C boiling point which consists of xylene and various paraffin) 100ml is added. It evaporates stirring a solvent after that.

[0032] The test of the pigment processed by melamine resin showed the result of having been similar to the test of an example 1.

It is ARAIDO as example 3 IRIODEIN 103 (from mica pigment and E. Merck, and Darmstadt to acquisition) 50g was indicated in the example 1. It coats with the polyethylene wax AC 400 by the signal (Allied Signal) company. [ which have the ten to 60 micrometer particle size which coating is carried out and is by Fe 2O<sub>3</sub> ] The pigment by which coating was carried out took the humidity test of DIN54001, and the following stability numeric values were given.

IROODEIN 103-/AC400 4-5 IRIODEIN 103 In the case of the pigment by which coating was carried out by 2-3AC400, redispersible has been improved. Floc was not accepted after including in a coating system.

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[Translation done.]